



THE TEXAS THUNDERBOLT



National Weather Service - Fort Worth, TX

Serving all of North Texas

www.weather.gov/fortworth

Summer 2011

NWS Fort Worth

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Questions? Comments?

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Social Media's Impact on NWS Fort Worth's Operations

by Nick Hampshire



The National Weather Service Weather Forecast Office in Fort Worth became a member of the social networking community on October 6, 2010. As of June 24th, there are 9,722 likes on our fan page. The addition of facebook has changed both the day-to-day, winter weather, and severe weather operations in our office. On a quiet day, posts are made to the facebook page to mention the forecast for the upcoming day or to highlight any significant weather events which may be impacting North Texas. These posts may be just text status updates, or text and graphical images which depict the expected impacts.

Facebook served as a valuable tool to the NWS operations during several winter weather events during the winter season. Leading up to the events, the office was able to share up to the minute forecast updates to the social network community of the expected forecast. During one event, the rain-snow line transitioned from the northeast (areas near Paris) southwest into the DFW Metroplex. The office received numerous reports from facebook users of the switch from rain to snow in real-time. This information was critical in forecast updates during the event. These reports would have not been received had it not been for the social network community on facebook.

Again, the NWS presence on facebook has been beneficial both to the users and to the NWS. Forecast updates were posted on the "fan page" leading up to each event, and real-time storm updates were posted as time permitted as the event was ongoing. During and post-event, facebook users provided storm reports of hail, wind damage, wind gusts, and potential tornadic features. These reports were crucial in many warning decisions the forecast office made during prolonged severe weather episodes.



The NWS presence on facebook will continue to evolve as lessons are learned on what is beneficial to the user and to the NWS. Facebook may not be the only social networking avenue that the NWS will utilize. Stay tuned for future updates and you may see the National Weather Service in Fort Worth on twitter sometime soon. To become a fan of our facebook page log onto our webpage at :

www.weather.gov/fwd



The severe weather season of 2011 has been an active period for North Texas.

Co-op Awards by Troy Marshall



Ralph McKinney, right, of Franklin, TX, accepts a 40 year length of service award from MIC Bill Bunting, NWS Fort Worth, TX. An informal luncheon was held in Franklin in honor of Mr. McKinney. Photo by HMT Troy Marshall.



From left, **Richard Ellis**, Observer at Lake Bridgeport Dam, TX, received his 15 year Length of Service Award from HMT Troy Marshall, NWS, Fort Worth, TX.

Six length of service awards, including one 40-year award, were earned by NWS Fort Worth Cooperative Observers recently.



From left, **Mike Turner** and **Edward Tally**, both observers in Justin, TX, received their 20 year Length of Service Awards from Meteorologist Victor Corbelli, NWS, Fort Worth, TX.



Patricia E. Griffith, Observer at Davila, TX, received her 10 year Length of Service Award presented by HMT Troy Marshall, NWS, Fort Worth, TX.

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Co-op Awards Continued...



Ronnie Witcher, observer at Lampasas, TX, received his 10 year Length of Service Award presented by HMT Troy Marshall, NWS, Fort Worth, TX.



Tom M. Holmes, observer at Trenton, TX, received his 15 year Length of Service Award from HMT Troy Marshall, NWS, Fort Worth, TX.

*Thanks to all
of our Co-op
Observers for
all of your
hard work,
dedication,
and service!*

StormReady Awards

Americans live in the most severe weather-prone country on Earth. Each year, Americans cope with an average of 10,000 thunderstorms, 5,000 floods, 1,000 tornadoes, and an average of 2 deadly landfalling hurricanes. And this on top of winter storms, intense summer heat, high winds, wild fires and other deadly weather impacts. You can make sure your community is ready for the weather with the National Weather Service's StormReady® program.

Some 90% of all presidentially declared disasters are weather related, leading to around 500 deaths per year and nearly \$14 billion in damage. StormReady, a program started in 1999 in Tulsa, OK, helps arm America's communities with the communication and safety skills needed to save lives and property—before and during the event. StormReady helps community leaders and emergency managers strengthen local safety programs.

StormReady communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education and awareness. No community is storm proof, but StormReady can help communities save lives.

We would like to congratulate Grayson County along with the cities of DeSoto, Farmers Branch, Haltom City, Irving, Mesquite, Terrell and University Park on becoming a StormReady community. Also, congratulations to Richland College, Southern Methodist University and University of Texas at Dallas.



Water Conservation

by Daniel Huckaby

"...with ever increasing demand for water, recent droughts have highlighted the need for water conservation."

Dallas/Fort Worth has added 1.5 million new residents in the last 10 years, and the population of the Metroplex is expected to double in the next 25 years. With the average household using more than 125,000 gallons of water each year, water resources are struggling to keep pace with increasing demand. This issue becomes all the more apparent when drought conditions prevail. Since the U.S. Drought Monitor was established in 1999, there has been only one summer without any drought designation in North Texas (2007). Drought has always been a part of Texas climate, but with ever increasing demand for water, recent droughts have highlighted the need for water conservation.

For North Texas residents, water is supplied almost entirely from area lakes, reservoirs that are also diminished by the blistering Texas sun. Evaporation alone can drop a lake level by an inch in less than two days. For Lake Lewisville, evaporation on a hot summer day can exceed 250 million gallons, equivalent to the daily summer usage for the entire city of Dallas. Over the course of a summer month, as much as 5 percent of a lake's conservation volume can simply evaporate.

We are powerless to diminish the evaporation rates of large, shallow lakes exposed to the hot summer sun. But we can reduce our water usage, helping to preserve our finite resources when rainfall is inadequate. In some municipalities, water usage doubles from winter to summer, primarily due to outdoor watering.



Lake: Before and after

Proper watering techniques can preserve landscaping and water resources:

- Water between 4 and 7 a.m. when wind speeds are at a minimum and relative humidity is at a maximum. (During the afternoon hours, half of the water can be lost to evaporation.)
- Grass watered deeply and infrequently has a stronger root system that is more tolerant to drought. Aim to water one inch, once a week, mimicking climatological rainfall.
- Avoid watering on windy days.
- When mowing, leave grass taller and allow grass clippings to remain, both of which help preserve soil and vegetative moisture.
- Consider harvesting rainwater in barrels or cisterns.

Indoor water conservation tips:

- A full bathtub can hold 70 gallons of water. A typical shower uses only 10 to 25 gallons.
- Turning off the faucet while shaving or brushing teeth can save several gallons of water.
- Repair leaky faucets and toilets that can waste 1000 gallons or more each week.

For more information about water conservation, visit the following pages

- savetarrantwater.com
- savetexaswater.org
- texaswatermatters.org
- wateriq.org
- epa.gov/watersense

For information about the ongoing drought, visit our drought information page at

weather.gov/fortworth/?n=drought

Summer Heat Safety

by Greg Patrick

In 2010, at least 138 people in the U.S. died from exposure to excessive heat. The latest 10-year averages indicate that heat is virtually tied with tropical storms/hurricanes as the number one weather-related cause of death, followed by floods, tornadoes, and lightning. However, information from the Centers for Disease Control suggests that the numbers of heat-related fatalities are underreported, especially if those numbers do not include fatalities in which heat was at least a contributing factor. During the heat wave of 1980, DFW Airport recorded a total of 69 days (long-term summer average is 16) with high temperatures above 100 degrees. Waco recorded 63 days (average is 21) over 100. The 1980 heat wave was widespread, and more than 1,250 people died nationwide. In August 2003, a record heat wave in Europe claimed an estimated 50,000 lives!

When the combination of heat and humidity is expected to become dangerous, the National Weather Service in Fort Worth will issue Watch, Warning, and Advisory products to highlight the danger. The "Heat Index" (HI) is used as a measure of how hot it really feels (in the shade) when temperature **and** relative humidity are taken into account (see chart below). Heat Advisories are the most frequent issuance and typically require the forecast occurrence of a Heat Index at or above 105 for two consecutive days, with an overnight low temperature of 78 or higher. For events that may pose a substantial threat to life with Heat Index values over 110, Excessive Heat Watches or Warnings are issued. The issuance of an Excessive Heat Watch or Excessive Heat Warning is rare for north and central Texas.



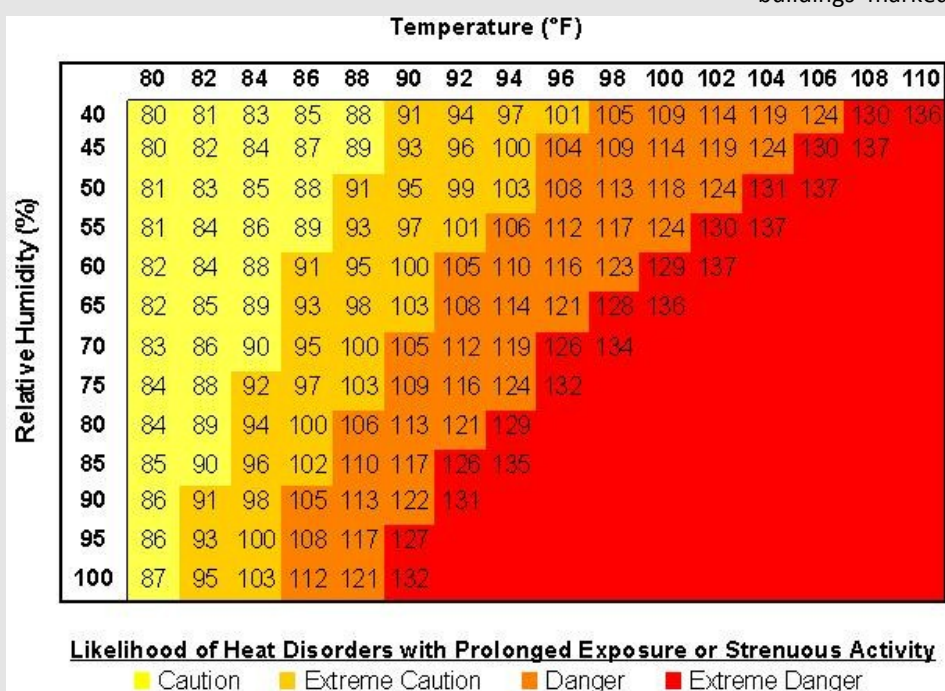
Heat disorders share one common feature: the individual has overexposed or over exercised for his age and physical condition in the existing environment. **Heat cramps** may be the first sign of overexertion or overexposure and are often related to dehydration. Painful muscle spasms in the legs or abdomen may be heat cramps. **Heat exhaustion** is associated with heavy sweating, headache, fatigue, and cool or pale skin. Fainting and vomiting are also possible with more serious stages of heat exhaustion. If untreated, heat exhaustion can progress to **heat stroke**, which is a life-threatening emergency requiring immediate medical attention. A very high body temperature (103° F or higher), hot dry skin, rapid pulse, and possible unconsciousness are symptoms of heat stroke.

People over 65, small children, chronic invalids, and those on certain medications or drugs are particularly susceptible to heat reactions. Individuals at risk should stay in the coolest available place, not necessarily indoors. All persons should reduce or eliminate strenuous activities, or reschedule those activities to the coolest time of the day.

To avoid heat disorders, drink plenty of water or other non-alcohol fluids. Spend more time in air-conditioned places. Air conditioning in homes and other buildings markedly reduces danger from the heat. Those

without air conditioning should try to spend some time each day (during hot weather) in an air conditioned environment. Limiting exposure to direct sunlight will also help prevent heat disorders. Outdoor workers can be especially vulnerable to excessive heat. When working under hot conditions, workers should take frequent breaks in the shade, drink plenty of fluids, and look out for co-workers.

As we head into another hot Texas summer, check the latest NWS forecast ahead of time so that you can be better prepared for potentially dangerous conditions. Additional information can be found at <http://www.weather.gov/om/heat/index.shtml>.



2011 Atlantic Hurricane Outlook

by Melissa Huffman

"...have a family plan that addresses the hazards your area is prone to and create a disaster supply kit with enough supplies to help you through the storm."

Despite the end of an extremely active spring, the weather won't be taking a summer vacation. June 1 officially marked the beginning of the 2011 hurricane season for the Atlantic Basin and NOAA's Climate Prediction Center (CPC) is forecasting a busy one. In their 2011 hurricane outlook, the CPC describes an "above-normal" season. "Above-normal", from the CPC's report, means that there is a forecast of a 70% chance of 12 to 18 named storms (winds greater than 39 mph) in the Atlantic Basin. Of these storms, 6 to 10 may become hurricanes (winds greater than 74 mph). The outlook also has forecasted 3 to 6 major hurricanes (Category 3 or higher).

What exactly is an "average" hurricane season? According to the National Hurricane Center, an average hurricane season has 11 named storms, 6 hurricanes, and 2 major hurricanes. The increase in expected hurricane activity is the result of above-average sea surface temperatures (especially August through October), which helps bring moisture and instability into the atmosphere to aid in hurricane development. Reduced vertical wind shear and weaker trade winds in the Atlantic Ocean and Caribbean Sea also contribute to increased hurricane development. Also supporting an active Atlantic Basin tropical weather season is the forecast for neutral El Nino/La Nina Southern Oscillation (ENSO)

conditions.

It is important to remember that the 2011 Hurricane Outlook does not predict when and where hurricanes will strike. Because the United States has a history of land-falling hurricanes, being prepared before the storm is crucial if living in a hurricane-prone area. To make sure you are ready for the upcoming season, have a family plan that addresses the hazards your area is prone to and create a disaster supply kit with enough supplies to help you through the storm. Additional hurricane preparedness tips are available through your local National Weather Service forecast office, the Federal Emergency Management Agency, and the American Red Cross.

To receive updates and advisories on tropical weather activity in the Atlantic Basin, tune in to your NOAA Weather Radio, visit the National Hurricane Center's website at www.nhc.noaa.gov or follow the National Hurricane Center on Twitter: www.twitter.com/NHC_Atlantic

For more information about the 2011 Atlantic Hurricane season, visit the CPC webpage at

<http://www.cpc.ncep.noaa.gov/products/outlooks/hurricane.shtml>



Severe Thunderstorm Review for North Texas Spring of 2011

by Dennis Cavanaugh

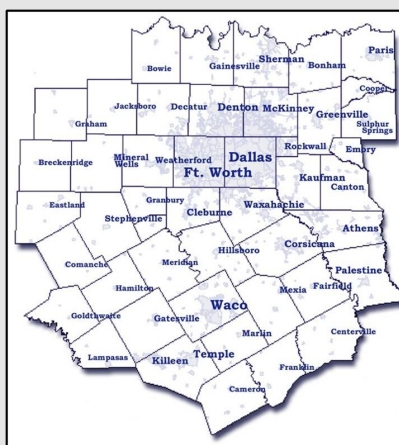
Severe thunderstorms during the spring of 2011 will be remembered for years to come due to the devastating impacts of tornadoes across the central and south-eastern United States. An active spring severe weather season across the county had been on record setting pace after April and May before settling down a bit so far in the month of June. Fortunately, North Texas missed out on the violent tornadoes this spring; however numerous severe thunderstorms and tornadoes affected the lives of the residents of North Texas.

Your Fort Worth National Weather Service office forecasts for 46 counties in North Texas; those areas included in the image to the right. Within this area, Spring of 2011 brought over 900 combined reports of hail, damaging thunderstorm winds, tornadoes and flash floods. The bulk of these events were produced by severe thunderstorm outbreaks across North Texas during the months of April and May which fits in well with the average frequency of severe thunderstorms in North Texas compiled by the Storm Prediction Center and shown in the image below. From all of the days that severe thunderstorms affected North Texas this spring, three events stand out; April 10th and 11th, April 25th and 26th and May 24th.

On April 10th and 11th, a line of severe thunderstorms developed along a frontal boundary that was draped through north central and west central Texas during the late afternoon hours of April 10th. These storms continued to hold together through the evening hours and intensified just before midnight. One of these storms developed into a powerful bow echo (so named because of its appearance on radar) that produced a swath of 70 to 80 mph winds and damaged homes and businesses from Goldthwaite northeast into southern portions of the Metroplex and continued east-northeast into the Sulphur Springs area. Just after midnight this complex of storms produced a few tornadoes in Johnson, Kaufman and Hunt counties. Thunderstorms finally moved east out of North Texas during the early morning hours on April 11th.

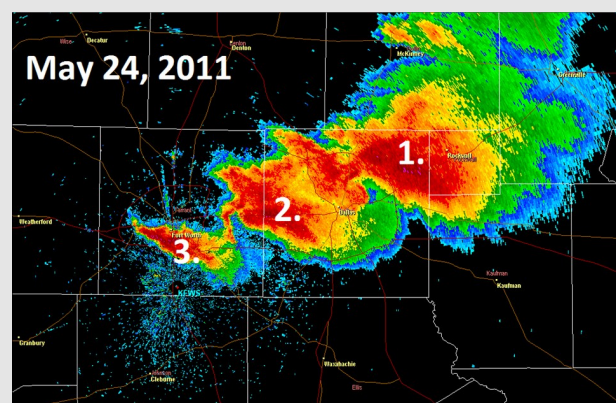
On April 25th and 26th, several supercell thunderstorms developed during the late afternoon hours along a stalled out front that was located just south of the Dallas/Fort Worth Metroplex. These supercells produced 21 tornadoes over this two day event. On April 25th, 11 EF-0 tornadoes were produced in several counties south of the

Metroplex. On April 26th 10 tornadoes were produced in Kaufman, Van Zandt, Limestone and McLennan counties. Of these tornadoes, the two strongest were rated EF-1 and touched down near Ben Wheeler in Van Zandt county and in Groesbeck in Limestone county. These tornadoes damaged several homes and commercial buildings during this two day event, but fortunately no serious injuries were reported.

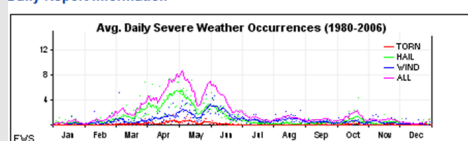


On May 24th, supercell thunderstorms developed along a dryline in north central Texas and moved east towards the Metroplex during the early evening hours. These storms produced 9 tornadoes in North Texas, most of which occurred in the general vicinity of the Metroplex (a picture of 3 supercell storms over the Metroplex is included below). Of these tornadoes, the two strongest touched down in Irving and in the far southwestern portions of the city of Denton, near the town of Argyle. The Denton tornado was rated an EF-2 and the worst of the damage occurred in one subdivision where several homes sustained damage. The Irving tornado was rated an EF-1 and several homes were damaged but the worst of the damage occurred when the tornado blew large trees onto residences. Fortunately no one was seriously injured from any of the tornadoes that occurred in North Texas.

Thanks to all of the volunteer storm spotters, emergency management, media partners and first responders that work with us to provide timely and accurate severe weather watches and warnings for the residents of North Texas!



Daily Report Information



Plot of daily severe weather reports in the search area. Lines denote a 7 day running mean.
Maximum daily value:
8.6 on 05 May
Primary Season:
Mar 21 - Jul 03

The Smell of Rain

by Dr. Weather

We've all noticed the distinct fresh smell after a summer rainstorm, but what causes this? The smell of rain actually has a name: ***petrichor***, and can be attributed to several different processes.

Believe it or not, the primary source of petrichor doesn't come from the rain in the sky, it comes from the ground. When it rains, the water chemically reacts with oils that accumulate on the ground from certain plants and trees to produce organic compounds. These organic compounds often smell sweet or fresh to us humans.

Another common source of petrichor is from a type of bacteria called Actinomyces. This bacterium grows in soil when conditions are damp and warm, but spores are produced when the soil dries out. When raindrops hit the ground, these spores are kicked up into the air and allow us to smell them. These spores have an earthy smell, similar to damp garden soil.

Petrichor will be most noticeable after a long dry spell on a hot day. This is because the longer it doesn't rain, the greater the buildup of plant oils and bacteria spores on the ground. Rain that falls on a hot surface also evaporates quickly, helping to send these surface materials airborne to reach our noses.

Finally, there is one more source of smell that only occurs with a thunderstorm. Thunderstorms produce lightning, and the high voltage charge zigzagging through the air will chemically react with oxygen to produce ozone. Ozone has a very distinct almost sweet smell, and if you've ever been near a busy photocopy machine, you'll recognize it. Typically the smell of ozone from a thunderstorm will be fairly faint, and is often overwhelmed by the smells produced from plant oils and bacteria.



Rain on a hot sidewalk.

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**"Protecting Life and
Property Across North
Texas."**



Thank you to all of the contributors to the Summer 2011 edition of The Texas Thunderbolt. Look for the Winter 2012 edition of The Texas Thunderbolt to become available toward the beginning of 2012.

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Visit us on the web!
weather.gov/fortworth

When Thunder Roars, Go Indoors!



Lightning is one of nature's most beautiful but deadly weather phenomena. It kills nearly 60 people across the United States each year and permanently injures hundreds more. Texas ranks 3rd behind only Florida and Colorado with 24 fatalities since 2001.

With the kids out of school for the summer there are ample opportunities to partake in outdoor activities across all of North Texas. Always remember that if you are outdoors and you see an approaching storm or hear thunder, take a break and find a safe shelter until the storm passes. In many instances this is as simple as getting back into your vehicle or house until the storm passes by. If away from home and no vehicle is available always seek a closed structure as pavilions or large trees may keep you dry, but offer no protection from lightning. For more information on lightning safety visit:
<http://www.weather.gov/os/lightning/>

Ask Dr. Weather!

If you are interested in the weather and have always wanted to have something weather-related explained, submit us your question! For the next issue of the Texas Thunderbolt, Dr. Weather will answer one of your submitted questions in a full length article. To submit your question, please send an email to sr-fwd.webmaster@noaa.gov.

The most recent Dr. Weather topics include: Snow Development, Frost, Microbursts, Landspouts, Hurricanes & Wind Shear and How Weather Effects Fire. Send us your question, and whether you'd like your name and location included in the article, and your question may be featured in the next installment of Dr. Weather's Wisdom!

Previous issues of the Texas Thunderbolt can always be found at
<http://www.srh.noaa.gov/fwd/?n=skywarn>